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THE JOINT WARFARE ANALYSIS PROGRAM

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INSTITUTE FOR DEFENSE ANALYSES
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PREFACE

This study was conducted for the Defense Manpower Data Center, Monterey, California, a field agency of the Under Secretary of Defense (Personnel and Readiness). Technical cognizance for this task was assigned to Dr. Carol A. Johnson, Training and Readiness Evaluation Analysis Division of the Defense Manpower Data Center.

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CONTENTS

Tables	ix
Summary	S-1
I. INTRODUCTION.....	I-1
A. Purpose.....	I-1
B. Background.....	I-1
II. METHOD OF COLLECTING DATA	II-1
A. The Structured Interview Guide.....	II-1
B. A Description of the Respondents.....	II-3
1. Military Service.....	II-3
2. Experience and Assignments.....	II-4
3. Areas of Specialization and Education	II-6
III. RESULTS.....	III-1
A. Information Provided by Interviews.....	III-1
1. Determining How Essential a JWAP Graduate Is to a Joint or Service Staff.....	III-1
2. Number of JWAP Graduates Desired/Required on Your Staff	III-3
3. Subjects that Should Be Included in the JWAP Course	III-3
4. Type of Officer Who Should Attend the JWAP Course	III-5
5. Integrating JWAP Into Current Service College Structure	III-5
6. Effect of Participating in JWAP on an Officer's Career	III-7
7. Is a Joint Course Needed or Can Current Service Schools Provide Adequate Preparation in These Areas to Perform Duties on a Joint Staff?	III-8
8. Attractiveness of a Master's Degree.....	III-10
9. If Such a Course Was Implemented, What Problems Do You Anticipate? Is it Important for the Course to be Equivalent to JPME Phase I (y/n)? What Grade Should Attend the Course (O-3, O-4, O-5)? Is It Realistic to Envision This Course as Career Enhancing as Other JPME Options: Why or Why Not? Is a 2-Year Course Too Long?.....	III-10
10. Other Comments.....	III-13
IV. DISCUSSION.....	IV-1

V. FINDINGS AND RECOMMENDATIONS	V-1
A. Findings.....	V-1
B. Recommendations.....	V-2
REFERENCES	R-1
GLOSSARY	GL-1
APPENDIX A—Interview Guide	A-1

TABLES

1. Military Service of Respondents	II-3
2. Status of Respondents.....	II-3
3. Military Rank of Respondents.....	II-4
4. Experience of Respondents in Joint Commands, National and Defense Activities (Including Multiple Tours).....	II-4
5. Experience of Respondents in Senior Assignments Within Their Own Service (Includes Multiple Assignments).....	II-5
6. Combat/Crisis Experience of Respondents (Includes Multiple Tours)	II-6
7. Areas of Specialization of Respondents (Includes Multiple Responses)	II-7
8. Advanced Degrees Earned By Respondents.....	II-8
9. Importance of Adding a Graduate of a JWAP to a Joint or Service Command	III-2
10. Number of JWAP Graduates Desired/Required on Your Staff.....	III-3
11. Subjects that Should be Included in the JWAP Course	III-4
12. Type of Officer Who Should Attend JWAP Course.....	III-5
13. If Implemented, How Should a JWAP Be Integrated Into the Current Career/Intermediate/Senior Service College Structure?.....	III-6
14. Effect of Participating in JWAP on Career.....	III-7
15. JWAP Needed or Are Current Service Schools Adequate?.....	III-9
16. Attractiveness of a Master's Degree for JWAP.....	III-10
17. Equivalence of JWAP to JPME Phase I.....	III-11
18. What Grade Officer Should Attend Course?.....	III-11
19. Would JWAP be Career Enhancing?	III-11
20. Length of Course	III-13

SUMMARY

The goal of the Joint Warfare Analysis Program (JWAP), developed by the Naval Postgraduate School, is to identify new technologies critical to success in future combat and to examine how best to integrate them in the conduct of Joint operations. The purpose of this study is to (1) assess the need for such a program in Joint Professional Military Education (JPME), (2) estimate the utilization of graduates of this program on Joint and major Service command staffs, and (3) examine the effect of participation in such a program on an officer's career. The findings are based on structured interviews with 50 senior flag officers on whose staffs graduates would serve. The flag officers come from all four Services; 74 percent are on active duty; 42 percent hold the rank of Lieutenant General/Vice Admiral or above; five are (or were) Chief of Staff of their Service.

FINDINGS

1. JWAP graduates are considered important on Joint and Service Command staffs; almost half of the respondents consider them essential and would trade off a current billet for such a graduate while a quarter would desire but be uncertain about a tradeoff. About one-quarter believe that a JWAP graduate would not enhance the capability of their staff. The average number of JWAP graduates desired on a staff was about 4 for an estimated total of 90 to 130 billets.
2. The curriculum should include study of Campaign Analysis, Analysis, Simulation, Joint Exercise Evaluation, Information Warfare, Wargaming, and Decision Aids, among other course content requirements. The JWAP program should emphasize Joint operational issues; trade-off studies should emphasize ways of determining optimum utilization of similar capabilities of the different Services; instructors should include warfighters of all Services.
3. Combat arms officers, line officers and pilots should attend JWAP. All other types of officers should be included but at lesser priority.
4. JWAP should be offered as an option with full equivalency for 1 year in the current JPME structure, or as a $1\frac{1}{2}$ - to 2-year program with an advanced degree. The Naval Postgraduate School advocates a 2-year program leading to a master's degree. The

effect of participating would be positive; only one officer thought its effect would be negative.

5. Although about one-third of the respondents say that a Joint course on warfare analysis is needed; a minority hold that it is not needed because current Joint education at the Service Schools is adequate or would be adequate if modified toward Jointness.

6. The JWAP course should be attended primarily by intermediate grade officers (51 percent), a master's degree would increase its attractiveness (50 percent), and the JWAP course would be career enhancing (36 percent).

7. A minority (about 25 percent) of respondents say that a JWAP graduate would not enhance the capability of a staff and that a Joint course is not needed because Service colleges provide adequate education on Joint matters or could be modified towards Jointness.

8. It is estimated that 30 to 40 JWAP graduates would be needed each year to fill about 90 to 130 billets on Joint and major Service command staffs, each held for about 3 years.

RECOMMENDATIONS

1. The Department of Defense should proceed with the development of a Joint Warfare Analysis Program that emphasizes methods of evaluating and exploiting Joint capability. This would be an option in Joint Professional Military Education, Phase I, for intermediate grade officers.

2. The program should emphasize Joint operational applications of analytical procedures; the faculty should include warfighting officers, active or retired, as well as academic specialists of all Services.

3. The Joint Warfare Analysis Program should provide a 1-year option for some officers and a 2-year option for others who elect to earn a master's degree in Joint Warfare Analysis.

4. The Joint Warfare Analysis program should initially target an annual output of about 30 to 40 graduates spread proportionally across the Services.

I. INTRODUCTION

A. PURPOSE

The purpose of this study is to estimate the need for a Joint Warfare Analysis Program (JWAP) that would be offered as an option in Joint Professional Military Education (JPME) to intermediate grade officers of all Services. This report is based on information we collected in structured interviews with senior flag officers, both active and retired, of all Services. We asked these officers about the need on their staffs for graduates of such a program, what the training should include, and what impact such training could have on an officer's career. The JWAP under development at the Naval Postgraduate School is intended to identify new technologies critical to success in future combat and to determine how best to utilize and synchronize the capabilities of the four Services in the conduct of Joint operations. The changing nature of war raises issues for Joint operations, such as the interoperability of current and emerging equipment; the optimum use of space, digital equipment and intelligence; and the matching of available weapons to novel missions.

B. BACKGROUND

Realization that the conduct of war is an all-Service effort occurred long before the Goldwater-Nichols Department of Defense Reorganization Act of 1986. The Joint Chiefs of Staff established the Army-Navy Staff College (ANSCOL) in 1943; soon afterwards, an agreement between General Dwight D. Eisenhower, Chief of Staff of the Army, and Fleet Admiral Chester W. Nimitz, Chief of Naval Operations, led to the establishment of the Armed Forces Staff College (AFSC) in 1946. General Eisenhower wrote:

Separate ground, sea, and air warfare is gone forever. If ever again we should be involved in war, we will fight it in all elements, with all Services, as one single concentrated effort. There is a need for a school which will conduct short courses of approximately five months' duration in Joint staff techniques and procedure in theatres and Joint overseas operations . . . [the Armed Forces Staff College] would perform the same role in the Joint education arena as the staff colleges in the Services.¹

¹ Memorandum to Admiral Chester W. Nimitz, 17 April 1946. Quoted in "Report of Self-Study: Intermediate-Level Phase II," Armed Forces Staff College, Norfolk, VA, June 1994.

We were involved again in war in Korea, Vietnam, and Iraq, and in lesser contingencies in Grenada, Panama, Somalia, Haiti, and Bosnia, and all were Joint operations. In "Joint Warfare of the U.S. Armed Forces," issued after the Gulf War, General Colin F. Powell, Chairman of the Joint Chiefs of Staff, said, "Joint warfare is team warfare" and "Joint warfare is essential to victory."² In the current edition, General John M. Shalikashvili adds, ". . . all commanders must understand, teach, and apply Joint doctrine as they prepare and train the men and women who wear America's uniform to fight our Nation's wars."³

One purpose of the Goldwater-Nichols Department of Defense Reorganization Act of 1986 is to increase the Joint perspective and expertise of officers of all Services. The Act requires (1) certain Joint professional military education before an officer can be designated a Joint Specialty Officer (JSO) and (2) experience in a Joint Duty Assignment before an officer can be promoted to General/Flag rank. It obliges the Secretary of Defense to report to Congress each year on the education and assignment of JSOs. Following Goldwater-Nichols, in November 1987 the House Armed Services Committee established a Panel on Military Education that reviews actions taken by the Department of Defense to develop JSOs. Named after its chairman, Representative Ike Skelton, the Skelton Panel has issued about 10 reports (prepared by the General Accounting Office) that comment on and make recommendations about emphasis on Joint matters in the Professional Military Education program.

Joint matters are now considered at all levels of military education, starting with the education of Cadets and Midshipmen before they are commissioned as officers. At the Intermediate (O-4 grade) level, Phase I of Professional Military Education lasts 10 months and is conducted at the Intermediate and Senior Level Colleges.⁴ Phase II is a temporary assignment that lasts 3 months, and is conducted only at schools of the National Defense University. The Chairman of the Joint Chiefs of Staff (CJCS) is responsible for coordinating the military education of members of the Armed Forces.⁵

² "Joint Warfare of the U.S. Armed Forces," Joint Pub. 1, 11 November 1991.

³ Ibid, 10 January 1995.

⁴ Goldwater-Nichols Act Implementation Report, Appendix E in William J. Perry, Secretary of Defense, *Annual Report to the President and the Congress*, U.S. Government Printing Office, February 1995.

⁵ Chairman of the Joint Chiefs of Staff, *Military Education Policy Document*, CM-1618-93. Joint Chiefs of Staff, Washington, DC 20318, 23 March 1993.

Completion of JPME is required before an officer can be nominated to become a JSO and be assigned to a Critical Joint Duty Assignment. About 1,000 of 8,000 Joint duty assignments are designated by the Secretary of Defense to be "Critical." These billets provide officers with significant experience in Joint matters in assignments that last 2 to 3 years. The Services have had problems in managing the careers of officers so that they can meet the requirements not only of their own Service but also of Joint education and experience in time to compete for promotion to General/Flag rank. In practice, some exemptions based on JPME-equivalent qualification have been permitted to accommodate changing Service requirements and conditions that were not apparent when the Goldwater-Nichols Act took effect.

In a study issued in March 1995, the Panel on Joint Professional Military Education of the Chairman, Joint Chiefs of Staff, found that although the two-phased approach to the education of JSOs has served its purpose well, it has also proved to be cumbersome:

... the original need for the second phase appears to be greatly diminished or even obviated PME institutions now need more flexibility to determine and meet today's user requirements for Joint education at all levels.⁶

The Panel proposes policy changes:

Expand the officer military education framework to include Joint education objectives and standards for all levels of PME, including precommissioning and primary levels. The framework would clearly outline a seamless system of Service and Joint education carried on throughout an officer's career.

Refine the programs of the Intermediate Service Colleges (ISCs) to prepare graduates for most Joint assignments while still meeting Service PME requirements.

Devise a system of quality assurance measures to ensure that Joint learning objectives and standards are met at all levels.⁷

The role of the Armed Forces Staff College would be broadened to provide courses on a "just-in-time" or an "as-needed" basis rather than as a follow-on, second phase to Service PME. Although the Panel's report will surely influence the structure of JPME, particularly with respect to the current Phase I/II requirements of the Goldwater-Nichols Act, no

⁶ Panel on JPME, 1995, p. iv.

⁷ Ibid, p. v.

response to the Panel's recommendations was available when this paper was being prepared.

The Naval Postgraduate School (1994) has advocated the need for a JWAP as an option in JPME:

The focus of the curriculum would be to identify technologies critical to success on future battlefields and to explore how best to combine them to improve U.S. capabilities to conduct Joint operations. Developments related to the modern battlefield will be studied from an interdisciplinary and interService perspective. Recent developments in weapons, sensors, computers, communications and systems engineering will then be described and evaluated. Students will be introduced to the cultures and processes that influence each Service's contribution to Joint warfare. They will also survey the political and strategic context and ramifications of Joint operations.

Equipped with this background, they will then employ operational research strategies to survey a range of technologies and procedures to identify integrative mechanisms for incorporating the technologies into Joint operations. Student activities will emphasize group learning and projects so that students can become accustomed to solving tasks in an interdisciplinary and Joint atmosphere. This is the kind of group problem solving environment that they are likely to encounter in Joint activities. Graduates are expected to have the ability to evaluate optimum courses of action for a CINC who can draw on the capabilities of all Services or of a component commander who supports a CINC.⁸

Jointness and Joint education are not open to challenge—they are now a matter of law as well as practice. Joint Warfare Analysis is envisioned to be a program that concentrates on ways to evaluate significant Joint and Service military issues that result from rapidly advancing technology and the changing nature of war. Such issues include the interoperability of high technology systems; optimum use of space; communications, command and control; modeling and simulation; potential mismatches between current missions and legacy systems; operations other than war; and how the revolution in military affairs influences the ability to meet various contingencies. In this environment, the problem is determining how best to utilize and synchronize the capabilities of the four Services. Here, the JWAP is meant to provide education to improve this capability.

We addressed the need for a JWAP by putting this matter directly to active and recently retired senior flag officers of all Services who have had responsibility and experience in Joint commands: "Would a graduate of a Joint Warfare Analysis Program be

⁸ Information provided by the Naval Postgraduate School, January 2, 1996.

a desired addition to the staff of a Joint command? What is the criticality of the need?" In the chapters that follow, we offer responses to this and related questions, as well as the methods used to collect this information. Appendix A contains the Interview Guide used by the authors in interviewing senior General/Flag officers of all Services.

II. METHOD OF COLLECTING DATA

We addressed the need for officers who had completed a program of study on Joint warfare analysis by asking current and former commanders whether or not such officers would be an asset to their staff. This information was collected by interviews with current and recently retired senior flag officers with extensive experience on Joint and Service commands. All interviews were conducted by the co-authors of this report, who are recently retired senior flag officers of all Services.

One way to collect the required information would be to distribute a questionnaire to a sample of officers in Joint and Service Commands. This approach was considered but abandoned because the required questionnaire turned out to be lengthy. We feared that it might be seen as burdensome and remote to senior officers and be delegated by them to a staff officer for response. A questionnaire does not permit the discussion and clarification that is possible in an interview and might not accurately represent the views of the responder. It is a fact that many questionnaires are not returned, and that those that are, are often incomplete. In two recent cases of questionnaires on professional matters sent to professional colleagues, the response rate was under 30 percent, even after several reminders over a period of 3 months.

A. THE STRUCTURED INTERVIEW GUIDE

We opted for a structured interview during which specified questions could be put to senior leaders by professional colleagues in an informal situation that encouraged a free interchange of comments, information, and judgments. A structured interview provides assurance (1) that all interviews are conducted in the same way, (2) that all questions are put in the same way and in the same order, and (3) that the same categories are used for recording responses. Several preliminary versions were tested and modified to improve our use of this method; in practice, the guide was not used rigidly. The Interview Guide we used appears in Appendix A. In most cases, the interviewers knew the respondents; no request for an interview was turned down although there were two cases where appointments could not be made because of busy schedules.

The interviewer explained the concept of the JWAP, then stated that the purpose of the interview was to gather judgments of senior officers on Joint and Service staffs about the need and value of such education as part of JPME. We requested responses that would be the personal views of the officers interviewed and not necessarily those of their commands. We assured them that their identity would not be divulged and that all who participated would receive a copy of the final report. We also requested a brief personal history, including assignments, areas of specialization, and Professional Military Education. In all cases, the familiar Biographical Sketch was provided and found to be most helpful. All interviews were conducted by retired flag officers, none of whom are included among those interviewed.

The following questions were discussed in the interview:

1. Would a graduate of a Joint Warfare Analysis Program (JWAP) be a desired addition to the staff of a Joint or Service command? What is the criticality of the need?
2. Can you give a rough estimate of a number of JWAP graduates desired/required on your staff?
3. What subjects should be included in the JWAP course?
4. What type of officer should attend this course?
5. If a Joint Warfare Analysis Program was implemented, how should it be integrated into the current career/intermediate/senior Service college structure?
6. What effect, do you think, could participation in this program have on an officer's career (i.e., promotion rate, assignment)? Why?
7. Is a Joint course needed or can current Service schools provide adequate preparation in these areas to perform duties on a Joint staff?
8. Would receiving a master's degree in JWAP increase the attractiveness of this program?
9. If such a course was implemented, what problems do you anticipate?
Is it important for the course to be equivalent to JPME Phase I?
What grade should attend the course?
Is it realistic to envision this course to be as career enhancing as other JPME options? Why or why not?
Is a 2-year course too long?
10. Are there any other comments you would like to make concerning the JWAP concept?

B. A DESCRIPTION OF THE RESPONDENTS

A total of 50 officers were interviewed, all of flag rank. The composition of this sample is described in the following text and tables.

1. Military Service

All four Services are represented, as indicated in Table 1.

Table 1. Military Service of Respondents

Service	Number	Percent
Army	12	24
Navy	16	32
Marine Corps	9	18
Air Force	13	26
	50	100

Most of these officers (74 percent) are now on active duty (Table 2).

Table 2. Status of Respondents

Status	Number	Percent
Active	37	74
Retired	13	26
	50	100

This group is weighted towards the senior flag ranks, thereby consisting of officers with more senior Joint experience and command and whose judgments would have significant influence on the need for and merit of a JWAP (Table 3). Almost half (42 percent) hold three or four stars; 90 percent hold the rank of Major General/Rear Admiral, Upper Half or higher. The group includes five Chiefs of Staff of their Service; Active or Retired status or Service affiliation is not identified in order to preserve individual anonymity.

Table 3. Military Rank of Respondents

Rank		Number	Percent
General/Admiral	O-10	11	22
Lieutenant General/Vice Admiral	O-9	10	20
Major General/Rear Admiral, Upper Half	O-8	24	48
Brigadier General/Rear Admiral, Lower Half	O-7	5	10
		50	100

2. Experience and Assignments

These officers, as expected and desired, have served on The Joint Staff, Joint commands, and defense and national agencies (Table 4). The average number of such assignments is approximately two each.

Table 4. Experience of Respondents in Joint Commands, National and Defense Activities (Includes Multiple Tours)

Activity	Number of Assignments
The Joint Staff ¹	21
U.S. Atlantic Command	7
U.S. Pacific Command	13
U.S. European Command	10
U.S. Central Command	13
U.S. Southern Command	3
U.S. Strategic Command	4
Allied Command Europe	6
Joint Task Force	9
Office of the Secretary of Defense ²	7
Defense Agency ³	2
National Security Council	2
	97

¹ Includes activities controlled by the Chairman, JCS, e.g., National Defense University, Joint Electronics Warfare Center.

² Senior positions only, e.g., Assistant or Deputy Assistant Secretary of Defense, or Director.

³ Includes Defense Intelligence Agency, National Security Agency.

The respondents, by virtue of their rank and length of Service, have also held the most senior command positions in their Services at Service Headquarters and Major Commands (Table 5). Each of these officers has held about four such positions.

Table 5. Experience of Respondents in Senior Assignments Within Their Own Service (Includes Multiple Assignments)

Assignment	Number
Service Headquarters	
Chief of Staff, Vice Chief of Staff	7
Deputy or Assistant Chief of Staff	58
Service Assistant Secretary	2
Major Service Commands	
Commander, Vice Commander	37
Deputy or Assistant Chief of Staff	26
Major Unit Commander	54
Cross-Service Activities ¹	12
	196

¹ Includes NDU, ICAF, Service War Colleges.

These officers participated in one or more wars or crises of the last 20 years; two retired officers served in World War II (Table 6).

**Table 6. Combat/Crisis Experience of Respondents
(Includes Multiple Tours)**

Combat/Crisis	Number
Vietnam	38
Gulf War	11
Korea	8
Haiti	4
Somalia	3
World War II	2
Libya	1
Panama	1
	68

3. Areas of Specialization and Education

The dominant areas of specialization of these senior officers are warfighting, weapons and platforms, e.g., aviation, surface ship warfare, and infantry (Table 7). However, all other specialties are also represented, e.g., logistics, RDT&E (research, development, test and evaluation), and foreign affairs.

**Table 7. Areas of Specialization of Respondents
(Includes Multiple Responses)**

Area of Specialization	Number
Aviation	19
Infantry	6
Surface Ship Warfare	5
Logistics	5
Submarine	4
Artillery	2
Engineering	2
Armor	1
Acquisition	1
Personnel, Manpower	1
Intelligence	1
Communication	1
RDT&E	1
Information Resources	1
Foreign Affairs	1
No Answer	5
	56

Most of these officers have earned one advanced degree and, in a few cases, two (44 master's and one Ph.D.). The leading specialization areas are international relations, business and public administration, and political science (Table 8).

Table 8. Advanced Degrees Earned by Respondents

Degree	Number
Business Administration	6
Civil Engineering	1
Computer Systems	1
Counseling and Guidance	1
Degree not specified	1
Education	2
Executive Program in National Security	4
Financial Management	1
History	1
International Relations	9
Mechanical Engineering	1
Operations Research	2
Personnel Management	1
Political Economics	1
Political Science	6
Public Administration	5
Systems Management	1
Telecommunications Management	1
No answer	11
	56

Our respondents, thus, are flag officers of all Services, most of them on Active duty; half hold (or held) our two highest military ranks. They have served in virtually all Joint and major Service commands and represent the type of officer whose judgments would determine the need for and utilize on their staffs officers educated in Joint warfare analysis.

III. RESULTS

A. INFORMATION PROVIDED BY INTERVIEWS

The need for a JWAP, subjects to be included in such a program, what type of officer should attend, and issues related to career development are reported in a series of tables that summarize the responses of these senior officers to specific questions raised in our interviews. Responses and comments on these matters were invited after a general, introductory discussion of the JWAP. The results are reported in the order presented in the Interview Guide.

1. Determining How Essential a JWAP Graduate Is to a Joint or Service Staff

The opening question was:

“Would a graduate of a Joint Warfare Analysis Program be a desired addition to the staff of a Joint or Service Command? What is the criticality of the need?”

As summarized in Table 9, 42 percent of the officers interviewed said that it would be “Essential to get a JWAP graduate and [they were] willing to trade off a current billet to get a JWAP billet”; an additional 24 percent said that “A JWAP graduate is desired but that [they] were uncertain about their willingness to trade off a current billet for the skills of a JWAP graduate.” Twenty-four percent said that a JWAP graduate would not enhance the capability of their staff, and 10 percent were undecided. When these responses are weighted with 1 for “Essential” and 5 for “Not essential,” the average response on this scale is 2.6, i.e., between “Essential and willing to trade off” and “Desired but uncertain about a trade-off.” (“Undecideds” were excluded in computing the average.)

Table 9. Importance of Adding a Graduate of a JWAP to a Joint or Service Command

Response	Number	Percent
Essential to get a JWAP graduate and willing to trade off a current billet to get a JWAP billet (1)	21	42
A JWAP graduate is desired but I am uncertain about my willingness to trade off the skill/experience of a current billet for the skills of a JWAP graduate (3)	12	24
A JWAP graduate would not enhance the capability of my staff (5)	12	24
Undecided	5	10
Total	50	100

Average weight: 2.6

[1 = Essential, 5 = Would not enhance]

This question led to the following comments:

I don't see why a billet trade is required. The course would provide training essential to current billets.

The last thing we need is another JPME course. *JWAP is not needed*. All our officers need to know about simulation, wargaming, and analytical tools is a familiarization bloc during JPME II; we in J-5 do not need staff experts.

This sounds like trying to add "Joint" to an Ops Analysis curriculum on top of JPME or putting JPME and Joint into Ops Analysis.

[Expressed strong support for increased Joint education in the telecommunications arena. Service communications experience does not prepare you for Joint communications assignments. Although he was impressed with the quality of his course at ICAF, it did very little to prepare him on the issues of Joint interoperability and other communications warfighting issues.]

Although I would be a strong supporter of JWAP, there must be *no increase* in the person-years committed to formal JPME and graduate education.

The issue is not giving up current skill/experience but getting an improved skill/experience mix.

Graduates should immediately go to a payback tour; it would be bad to assign a JWAP graduate to a billet that doesn't require the education.

It is critical for Joint staff officers to have the highest Service skills possible. Thus, officers must attend Service PME schools, in contrast to JPME.

2. Number of JWAP Graduates Desired/Required on Your Staff

Responses to the question "Can you give a rough estimate of the number of JWAP graduates desired/needed on your staff?" ranged from none (20 percent) up to 25 (2 percent, Table 10); 50 percent of the respondents gave non-numerical answer (e.g., "a few," "many" or "don't know"). For the 50 percent who offered a number (including "none"), the average number of JWAP graduates desired/required on their staff was 3.7; excluding those who would have none, the desired number on their staff is 6.2 (by 30 percent of the respondents); in addition, 24 percent said "a few" or "some."

Table 10. Number of JWAP Graduates Desired/Required on Your Staff

Number of JWAP Graduates Desired/ Required on Your Staff	Number	Percent
0	10	20
1-4	10	20
5-9	2	4
10-14	2	4
15-19		
20-24		
25-29	1	2
 A few/some	11	22
Many	1	2
Don't know/no answer	13	26
 Total	50	100

3. Subjects that Should Be Included in the JWAP Course

Those interviewed were given a list of 21 subject matter areas and asked to rate their importance for inclusion in the JWAP course; the subjects included techniques of quantitative analysis, operations research models and logistics, *inter alia*. A five-point scale was used, with 1 indicating "Most important," 3 "Useful," and 5 "Not important." The list of subjects had been developed in preliminary tests of the Interview Guide. Respondents were invited to suggest subjects not already on the list.

The results (Table 11) show that the three subjects rated most important were Campaign Analysis, Simulation, and Joint Exercise Evaluation (1.16, 1.25, and 1.42, respectively), followed by Information Warfare, Wargaming, and Decision Aids (1.53,

1.57, and 1.77, respectively). The three lowest ratings were given to Precision Guided Missiles, Costing and Assessment, and Data Processing (2.81, 2.82, and 2.92, respectively). The order of importance among these subject matter areas, as seen by senior officers, suggests a guideline for the courses to be included in the JWAP.

This list is not intended to be a substitute for course design, which requires a more formal procedure of defining requirements and allocating time to topics. Rather, it suggests priorities to be given to the analytical aspects of a JWAP program.

Table 11. Subjects That Should be Included In the JWAP Course

Subject	"Importance" ¹	Number of Responses
Campaign analysis	1.16	25
Simulation	1.25	28
Joint exercise evaluation	1.42	24
Information warfare	1.53	19
Wargaming	1.57	30
Decision aids	1.77	22
Logistics	1.81	21
Optimization	1.81	21
Interoperability	1.82	17
Techniques of qualitative analysis	1.86	28
Tactical decision aids	1.90	20
Techniques of quantitative analysis	1.96	30
Operations research models	2.07	27
Communications	2.14	14
Intelligence	2.24	17
Space systems	2.32	19
Sensors	2.50	16
Probability statistics	2.62	21
Precision guided missiles	2.81	16
Costing and assessment	2.82	17
Data processing	2.92	12

¹ Average rating on a five-point scale where 1 indicates "Most important," 3 "Useful," and 5 "Not important."

4. Type of Officer Who Should Attend the JWAP Course

When asked what type of officer should attend the JWAP course, senior officers rate it as most important that combat arms officers, line officers, and pilots attend (Table 12). Forty-one respondents rate this type of officer 1 ("Most important"); three gave a rating of "2." No such uniformity applies to any other type of officer, for whom average ratings vary from 2.15 to 3.67; each of these types received some ratings of "not important" for them to attend a JWAP course, most frequently for manpower and personnel specialists.

Table 12. Type of Officer Who Should Attend JWAP Course

Type of Officer	Average Rating ¹	Number of Responses
Combat arms/line officers/pilots	1.05	44
Intelligence officers	2.15	33
Logistics officers	2.38	34
Combat support and combat Service support officers	2.48	29
Communications officers	2.56	36
Manpower/personnel specialists	3.67	27

¹ Five point scale where 1 indicates "Most important."

Additional responses to this question follow:

Should be distributed according to percent of officers in each category.

None ruled out but needed for warfare officers.

No special type. JWAP should be inculcated into all officers, not just a few who attend a separate course.

5. Integrating JWAP Into Current Service College Structure

"If a Joint Warfare Analysis Program was implemented, how should it be integrated into the current career/intermediate/senior Service college structure?"

Officers were given five options, including "No opinion." Only two officers had "No opinion"; all others, as shown in Table 13, selected one or more ways to integrate JWAP into the current career development structure.

Table 13. If Implemented, How Should a JWAP Be Integrated Into the Current Career/Intermediate/Senior Service College Structure?

Response	Number of Responses	Percent
As an option in conjunction with current curricula	19	32
As a 2-year program that includes the appropriate level PME equivalency and an advanced degree	16	27
As a separate course in lieu of current schooling (with full equivalency)	16	27
Any other recommended option	7	12
No opinion	2	3
Total	60	101

The preferred choices were to integrate JWAP as an option with current curricula (32 percent), as a 2-year program with appropriate level PME equivalency and an advanced degree (27 percent), or as a separate course in lieu of current schooling with full equivalency (27 percent). The comments make it clear that no matter how important the JWAP program may be, it should not increase the amount of time allocated now to JPME in an officer's career. Given the small differences in frequency of response, it is fair to say that all three options are almost equally preferred.

The following comments were offered:

As a separate course:

At a senior Service college

As a 2-year program:

For a few selected officers.

As a short course, in lieu of JPME II or an add-on at AFSC.

Length could be detrimental. It would be wonderful and could improve solidarity of all Services if it is a substitute for some part of JPME, Phase II; not worthwhile if added as an additional JPME requirement.

Other options:

Three months at NPS after graduating from an intermediate level school.

Variable length.

For some specialists.

6 . Effect of Participating in JWAP on an Officer's Career

Our respondents were asked for their judgment on the effect that participating in the JWAP program could have on an officer's career, in terms of promotion rate and assignment. Half of the group thought the effect would be Positive, a quarter Neutral, and one officer said Negative. Twenty percent offered no judgment (Table 14). Note that if the 10 officers who gave no response are eliminated from the table, the positive, neutral and negative responses increase to 65, 32, and 5 percent, respectively. Overall, the responses become more positive.

Table 14. Effect of Participating in JWAP on Career

Effect	Number of Responses	Percent
Positive	26	52
Neutral	13	26
Negative	1	2
No response	10	20
Total	50	100

When asked why the effect would be positive (or negative), the following responses were offered:

Positive

With Information Warfare exploding, these officers would be in major commands in 3 to 5 years.

Joint operations will dominate warfare. JWAP will enhance Joint duty performance and improve promotability.

The career opportunity of the individual should be enhanced. Personnel selected for JWAP would appear to have a leg up on the key warfighting skills necessary for success in the Joint world.

These individuals would be a blend of operational (Joint and Service) and analytical expertise. These types will make excellent staff officers en route to senior command levels.

Neutral

It could be positive or negative. To be useful, the officer needs to be well grounded in his/her Service operations/plans. This may come too late to help/hurt their career.

Depends on officer's ability.

Promotion potential is based on job performance and how you apply knowledge, not the educational process itself.

Too many factors for this to be much of a driver.

Negative

JWAP assignment would stovepipe graduates.

Because the course will compete with their warfare designations and if it reduces their time in combat arms, it may result in their falling behind their contemporaries and combat arms.

7. Is a Joint Course Needed or Can Current Service Schools Provide Adequate Preparation in These Areas to Perform Duties on a Joint Staff?

Answers to this open-ended question can be placed in one of three categories: (1) a Joint course is needed, (2) a Joint course is not needed because current efforts at the Service Schools dealing with Joint activities are adequate, and (3) efforts at the Service schools would be adequate if they were modified with a "Joint top off." A third of these officers said that a Joint course is needed and another third said that current activities at the Service Schools would be adequate, provided they were modified to increase emphasis on Joint activities (Table 15). About a quarter believe that a Joint course is not needed because current JPME at the Service Schools is sufficient. One very senior officer said that he was not sure and that there is a need to study this, and one officer had no response.

Table 15. JWAP Needed or Are Current Service Schools Adequate?

Response	Number of Responses	Percent
A Joint course is needed	17	34
A Joint course is not needed because current JPME at the Service Schools is sufficient	13	26
Courses on Joint activities at the Service Schools are adequate if they are modified towards Jointness	18	36
Not sure: need to study this	1	2
No response	1	2
	50	100

Illustrative comments follow:

JWAP course is needed

The War College curriculum cannot accommodate the time required nor can time be spared from the current curriculum.

The Joint course is needed to insure Joint warfighting spin is maintained.

JWAP course is not needed

Current Service schools are adequate.

All JPME curricula provide some solid knowledge in this area.

Modify Service school programs

Current Service and Joint schools could accommodate Joint analysis if willing to give up curriculum time.

Service schools provide adequate schooling in-house. A Joint "top-off" may be of some use.

Enhance JPME with more Joint exercise evaluation, simulation and modeling.

Other

Not sure but it should be studied to determine best approach.

8. Attractiveness of a Master's Degree

We asked respondents, "Would receiving a master's degree in JWAP increase the attractiveness of this program?" A five-point scale was offered where 1 represents "Very attractive" and 5 represents "Not attractive." The results are summarized in Table 16. Twenty-eight percent said "Very attractive," and 16 percent said "Attractive." If we disregard the 19 "No responses," 45 percent said "Very attractive" and 26 percent said "Attractive." The average rating of the 31 officers who responded was 2.3, i.e., positive on a five-point scale.

Table 16. Attractiveness of a Master's Degree for JWAP

Rating	Number of Ratings	Percent
1 Very attractive	14	28
2	3	6
3 Attractive	8	16
4	4	8
5 Not attractive	2	4
No response	19	38
	50	100

9. If Such a Course Was Implemented, What Problems Do You Anticipate? Is it Important for the Course to be Equivalent to JPME Phase I (y/n)? What Grade Should Attend the Course (O-3, O-4, O-5)? Is it Realistic to Envision This Course as Career Enhancing as Other JPME Options? Why or Why Not? Is a 2-Year Course Too Long?

These questions addressed problems that might arise if a JWAP course were implemented. The first was "Is it important for the course to be equivalent to JPME Phase I?" A majority (50 percent) said "Yes" while 22 percent said "No"; 28 percent did not answer (Table 17). If "No Answer" responses are disregarded, "Yes" responses increase to 69 percent.

Table 17. Equivalence of JWAP to JPME Phase I

Equivalent to JPME Phase I	Number	Percent
Yes	25	50
No	11	22
No answer	14	28
	50	100

A majority (51 percent) said that Grade O-4 officers should attend this course, and 25 percent said Grade O-5; the remainder (22 percent) favored grade O-3, and one officer said Grade O-6 (Table 18). If "No Answer" responses are disregarded, "Yes" responses increase to 69 percent.

Table 18. What Grade Officer Should Attend Course?

Grade	Number	Percent
Captain/ Lieutenant, Senior Grade	13	22
Major/Lieutenant Commander	30	51
Lieutenant Colonel/Commander	15	25
Colonel/Captain	1	2
	59	100

Note: Nine respondents selected more than one grade.

About one-third (38 percent) said that this course would be career enhancing and 6 percent said "No" (Table 19). Over half of the respondents did not answer this question; if these are disregarded, the number who believe JWAP would be career enhancing increases to 86 percent.

Table 19. Would JWAP be Career Enhancing?

Career Enhancing?	Number	Percent
Yes	19	38
No	3	6
No answer	28	56
	50	100

Some comments follow:

Career enhancing

Exploding technology demands military expertise in this field.

Yes, if creating such a specialty is desired and the students are sought by users, i.e., senior commanders.

Yes, so long as it is treated at the senior staff level.

Any education opportunity that enhances understanding in the Joint arena must be considered a plus. I believe we have turned the corner on the old perception that Joint assignments are drawbacks to career progression. Education/training that aids officers in succeeding in a Joint environment should only add to this new vision. Yes, but must have true Joint flavor both in faculty and student mix.

Should not replace current JPME options.

Not career enhancing

Probably not. JPME will likely be perceived as priority path and recognized by leadership as such.

Probably not. A little too "specialist" as opposed to more broadening.

Almost one-half (46 percent) said that a 2-year course would be too long; one-quarter (28 percent) said 2 years would not be too long, and 12 percent preferred 12-18 months (Table 20). In retrospect, this question should have been phrased as "What is the right length, in months?" The responses suggest that a 1-year program is preferred and that a 2-year program may have limited acceptability for specialists. In any case, a systematic planning approach would identify specific educational needs and try to balance them against resources and the career needs of intermediate level officers.

Some comments follow:

Initially should be 1 year and only grow into 2 if required.

Probably too long.

Two years with master's degree equals credibility plus assignability.

Table 20. Length of Course

Two-year Course Too Long?	Number	Percent
Yes (too long)	23	46
Prefer 12-18 months	6	12
Not too long	14 ¹	28
No answer	7	14
	50	100

¹ Includes 6 who said "OK for a few."

10. Other Comments

At the conclusion of each interview, the final question was:

"Are there any other comments you would like to make concerning the JWAP concept?"

About half of the officers provided additional comments to this question. These responses are arranged in five categories, as shown below, with one called "General."

Effect of JWAP on Career

Advocates the JWAP as a follow-on to Command and General Staff College. Recommends early selection for the program and a graduate course focused on job requirements in the officer's next job. He was very concerned about the Joint payback requirements after completing JWAP—more mandatory wickets in a full career pattern.

Can support a program that includes compensatory reductions in other education such that there is no increase in personnel in the education pipeline and the course would be in lieu of other PME and graduate education requirements, i.e., no impact on career pattern.

This is a career problem for officers if the course is Joint and/or for JPME credit, thus requiring immediate assignment to a Joint duty billet.

We cannot add another career milestone to the career path of a quality young officer.

Modeling and Simulation

The J-2 today lacks people sufficiently grounded in wargaming and simulation able to use quantitative and qualitative techniques, especially looking into the future. Wargaming and simulation are major shortfalls. We must use contractors to get the job done. We need skilled people to be the catalyst and insure better use of contractor support. Contractor support

is only about 60 percent effective today because of our inability to properly direct it.

Modeling and simulation are essential skills not obtained by enough officers; but leave this education piece to the Services. Joint officers need to be capable of fighting their own systems.

There is a current critical need for officers with depth in modeling and simulation. Big dollars are going into these areas and no one knows what they are getting. Let the Services handle education. A short Joint training course may be OK.

I tried to answer this constructively Modeling and simulation will become *much more important* . . . so that is where, I believe, a program like this will play a bigger role in the future. Somehow, we'll have to watch "stovepiping." And, we'll need *generalists* (fighter/bomber people) vice specialists, and you know how hard that will be.

Despite his cool opening, he expressed a strong need for officers with JWAP skills. He indicated one of the most frustrating aspects of his current job is getting to ground truth in wargaming and simulations. He has access to four models and they all provide significantly different information. He badly needs officers who could challenge the models and help the J-3 and CINC sort through the results.

Operations Analysis

Current operations analysis courses have unnecessary material needed to meet civilian academic accreditation requirements. A 1-year JWAP course is desirable and possible.

A course that is more operationally relevant has great appeal.

JWAP can solve a problem of operations research students spending 2 years in graduate schools and 2 to 3 years in a payback billet.

The basic idea looks good and is probably a spinoff of the existing operations analysis postgraduate curriculum. Whether or not it is good enough to support with dollars depends on the need as viewed from current day Joint staff holders. I'm not sure it will or can get enthusiastic support from the other Services. Without cross-Service support for a planned annual student loading factor, it will be hard to get off the ground.

On-the-Job Training vs. a Course

On-the-job training is more valuable than an academic course.

On-the-job training for O-1 to O-3 sufficient, with war college buttressing higher ranks.

On-the-job training is not particularly valuable; we need training in operations analysis, seasoning in a specialty, and then assignment to Joint duty. [Five citations]

My bottom line is that the course could be very useful. However, how long to run it and how to split the course between theoretical and practical on-the-job education and training needs to be carefully looked into and evaluated. This training will be of little use unless the knowledge gained can be put to use by the commander and his staff.

Cross-Service and cross-discipline on-the-job training are needed. Cross-training in sensors, weapons, and platforms is needed to have a true Joint officer, but don't use Service War Colleges for these purposes.

General

[He seized the opportunity to vent his frustration on JPME Phase II.] The Armed Forces Staff College does a fine job but the course is unnecessary. The course is disruptive to the officer and the command. In addition, there is not sufficient information to justify a 12-week course. He solicited our help in reversing this requirement. [The Panel on JPME, cited above, concurs.]

A school such as this, as opposed to being a "track option" could fall into the hands of zealots—this would be a bad thing for the individuals, the school and the Services.

More swapping of officers, staff, and students at Service colleges is a good idea, but we don't want to degrade individual Service warfare training.

Seems like sign painting to me. There isn't a different way to perform analysis. The same methodology is used; what is needed is to tailor the methodology to the analytic problem.

When I was J-5, I had Joint inputs; so why do you need a specific course to teach all the Joint skills.

Need to insure that the curriculum is efficient, lean, and does not repeat other material already completed by the attendees. Also, we must make sure that graduates have an opportunity to utilize their new skills and ability in rewarding assignments.

Needed to get quality students from the Services.

Something like JWAP is needed but the fundamental problem is to get officers to understand the capabilities of sensors and equipment, e.g., radars. We need small, computer-driven games to teach officers how to use sensors and equipment to solve problems they will face at sea. Last thought—above all, send more officers to Joint duty. The value of on-the-job training is underestimated.

IV. DISCUSSION

Most (66 percent) of the flag officers we interviewed, i.e., men who now hold or have held senior positions in Joint and Service Commands, report that it is essential or desired to have a graduate of a JWAP on their staff. Close to half (42 percent) would trade off a current billet to get a JWAP billet while 24 percent would not; a minority (24 percent) say that a JWAP graduate would not enhance the capability of their staff. The average number of JWAP graduates desired on a staff was judged to be 3.7; if we exclude the 24 percent who would have None, the average number of JWAP graduates on a staff would be 6.2 graduates. If we estimate that there might be 6 JWAP graduates in the Office of the Secretary of Defense and on each of 10 Joint Staffs (the Joint Staff and 9 Joint combatant commands) and 2 each on approximately 32 major Service commands (8 commands in each of the 4 Services), one may project a need for about 120 to 130 JWAP graduates. (This number may be reduced to 90 to 98, to account for the 25 percent of commanders in our sample who saw no such need and would not take advantage of their availability.) Such personnel serve on a headquarters staff for about three years each; this suggests a student output of about 30 to 40 graduates per year. Similar calculations based on other assumptions can be useful for planning purposes and for estimating the total number of JWAP billets and the annual JWAP student output.

Six subjects judged to be most important in a JWAP course are Campaign Analysis, Techniques of Quantitative Analysis, Simulation, Wargaming, Information Warfare, and Joint Exercise Evaluation. These are desired and important capabilities on Joint and Service staffs primarily, but not exclusively, for combat arms and line officers. JPME certification may well require the inclusion of other course material.

If a JWAP is implemented, it should be an option with full equivalency in the current JPME career structure. Only one officer in our sample (2 percent) thought that participating in JWAP could have a negative effect on an officer's career; 51 percent thought the effect on career would be positive, 26 percent thought it would be neutral. There is a question as to whether the subject matter material proposed for the JWAP is better provided by a Service School or the JPME Program; about one-third selected the latter route because, e.g., "The Joint course is needed to insure the Joint warfighting spin is

maintained"; about 25 percent say that Joint activities at the Service schools are adequate; another 34 percent say Service school curricula could be modified to become so. A master's degree would increase the attractiveness of this program, according to about one-third of the respondents. About 75 percent suggest that officers grade O-3 and O-4 should attend a JWAP course; half suggest that it be equivalent to JPME Phase I and last about 1 year (2 years would be too long). About 40 percent judged that attending such a course would be as career enhancing as other JPME options; a few (11 percent) said it would not.

This report has considered two different types of Joint Warfare Analysis Programs:

1. A 1-year program that would be an option in current JPME, Phase I, and
2. A 2-year master's level program.

The Naval Postgraduate School (NPS), which has developed a JWAP, advocates a 2-year program leading to a master's degree. NPS believes that the 1-year, nondegree program would provide an officer with only a limited working knowledge of Joint warfare analysis and probably would not be in the best interests of the officer. And, according to students at NPS, most officers would find the course unattractive.

There is a high degree of concurrence between the NPS program and the subject areas thought to be desirable by the senior officers we interviewed. This confirms the NPS view that it is on the right track. A 2-year master's program allows flexibility to provide an officer with the education needed to support the military needs expressed in Joint Vision 2010, Navy 2020, and Army XXI. The NPS has been advocating the desirability of a JWAP for the past few years, and its interest has focused exclusively on the 2-year master of science program because its primary interest as an institution is in graduate education. However, NPS believes that its 2-year master's JWAP would meet JPME Phase I educational requirements.

The informal nature of our interviews with senior officers invited many comments; these provide a strong endorsement of the JWAP that may not be obvious from the summary tables:

These officers would be in major commands in 3 to 5 years.

Joint operations will dominate warfare. JWAP will enhance Joint duty performance and improve promotability.

Personnel selected for JWAP would appear to have a leg up on the key warfighting skills necessary for success in the Joint world.

Negative views of the JWAP, expressed by about one-quarter of those interviewed, appear to derive not from the purpose and nature of the program but from the effect that participation in it could have on an officer's career or from the view that current Service educational and assignment practices provide adequate knowledge about Joint activities. JPME, with or without JWAP, is a requirement for promotion to flag rank; nevertheless, it reduces the time available to an officer to gain expertise in his own Service, which heavily influences his opportunities for promotion. Not all officers see the need for Joint PME, especially Phase II. Indeed, the CJCS Panel on JPME (1995) holds that "the original need for the second Phase appears to be greatly diminished or even obviated." In any case, JWAP is meant to be an option in Phase I rather than Phase II. The CJCS Panel did not advocate the abolition of Phase I.

A minority of officers hold that Service war colleges provide adequate education about Joint activities and that, therefore, a new JWAP is not needed. Most senior officers in our sample do not hold this position; our impression is that JWAP tended to be endorsed more frequently as the seniority of officers increased. Even though only a minority of flag officers hold negative views about the need for a JWAP, it is important to address their views directly. Some of these views and comments on them follow:

Since warfare analysis (or operations research) is taught in the Service colleges, there is little need for *Joint* warfare analysis.

Comment: This may be correct with respect to learning about analytical techniques and procedures but knowledge of operations analysis per se may not provide the experience needed to perform objective tradeoffs, particularly in areas where similar capabilities are provided by more than one Service such as in fire support (field artillery or air strike), close air support, logistics, or communications.

No JWAP graduates are desired or needed on my staff.

Comment: This is a commander's call. A majority of commanders feel otherwise.

The JWAP course should not be mandatory.

Comment: Agreed. It is intended to be an option in JPME, Phase I.

The JWAP course takes too much time out of an officer's career.

Comment: No additional time in an officer's career is required if he selects the option to spend 1 year of JPME, Phase I, on JWAP rather than on some other Joint education program. If he decides to spend 2 years on JWAP and earn a master's degree, he may become a specialist in Joint warfare analysis.

On-the-job training in warfare analysis is more important than academic training.

Comment: Both on-the-job and academic training are needed, and one without the other is probably an inefficient way to learn. An effective academic program would benefit by having warfighters, as well as academics, on the instructional staff; an effective on-the-job training program needs expert mentoring.

This study provides evidence for the following conclusions:

There is a need for improving the technical and analytical skills of some Joint staff officers with a program such as JWAP.

The number of billets requiring this education appears to justify a program.

The length of the JWAP course should be as short as possible with a goal of 1 year and an upper limit (less desirable) of 2 years. There is a need to minimize an unintended impact that time spent on education may have on the time that, for career purposes, an officer needs to spend in his own Service.

Officers receiving this type of Joint education should be primarily from the combat arms (but not restricted to combat arms) and in the grade of O-4, possibly O-5.

Attendees must receive credit for JPME and should be selected by the Services using the normal JPME selection procedures. Attendees should not be selected through the normal advanced degree application procedures. This is critical to ensuring the input of fully competitive officers; if JWAP is not JPME equivalent, other graduate degree programs are probably adequate.

It would be desirable for attendees to receive a master's degree.

Policies for the assignment of graduates should be similar to that for other JPME graduates, vice the rigid payback requirements for graduates of advanced degree programs. (Desirable to reduce impact on career pattern).

Any program must not increase the student man-years in the education pipeline nor increase the resources required by educational institutions to conduct the program. (The number of students assigned to other technical and analytical advanced degree programs, e.g., OR/OA, could be reduced.)

Efforts beyond the scope of this study include the following:

The specific billets requiring a JWAP education. (Respondents provided varying visions of the JWAP concept.)

The technical and analytical courses required by officers assigned to the billets designated for JWAP graduates. (Respondents were least clear and confident of their answers to the question on course content.)

The length of any course(s) in the program. (This will be driven by the course material required for JPME certification and JWAP course requirements.)

The method of integrating JWAP into the current JPME and advanced degree programs. (Options include a separate stand-alone graduate course, an add-on package during or following current JPME courses, or both.)

We have identified many of the concerns and narrowed the framework for structuring a successful and valid JWAP Program. We have defined a program that is needed and that can (and we believe will) be supported. The next step would be to expand the concept presented here into a complete proposal that qualifies for formal consideration.

The first step would be to identify the course material required for JPME certification if it is provided at a graduate education institution, such as the Naval Postgraduate School or the Air Force Institute of Technology. This would provide the data needed to determine whether it is feasible to develop a stand-alone course at a non-JPME school. It is also necessary to determine detailed course content.

The next step would be to begin an iterative process of identifying billets and technical and analytical education requirements for the billets. This step would provide the remainder of the data required to assess course length. In addition, one could begin to develop course track options. It is possible that the educational requirements of some billets could not be satisfied.

The last step would be to define a specific proposal with location, length, and other details for coordination with the Services and Joint organizations. Compensatory reductions in other graduate education programs could be identified and final resource implications assessed.

V. FINDINGS AND RECOMMENDATIONS

A. FINDINGS

A JWAP has been proposed as an option in JPME, Phase I, for intermediate level officers. We base our assessment of the need for such a program, the utilization of graduates on Joint and major Service command staffs, and the effect of participation in such a program on an officer's career on interviews with 50 senior flag officers of all 4 Services on whose staffs graduates would serve. Of these officers, 74 percent are on active duty, 42 percent rank as Lieutenant General/Vice Admiral or above, and 5 are or were Chief of Staff of their Service (Active or Retired). The findings that follow are expressed as summaries of the particular views of these officers concerning the need for a JWAP.

1. JWAP graduates are considered important on Joint or Service Command staffs; almost half consider them essential and would trade off a current billet for such a graduate while a quarter would desire but be uncertain about a tradeoff; about one-quarter believe that a JWAP graduate would not enhance the capability of their staff. The average number of graduates desired on a staff was about four; we estimate that 90-130 billets are needed.
2. The curriculum should include study of Campaign Analysis, Analysis, Simulation, Joint Exercise Evaluation, Information Warfare, and Wargaming and Decision Aids, among other course content requirements. The JWAP program should emphasize Joint operational issues; tradeoff studies should emphasize ways of determining optimum utilization of similar capabilities of the different Services; instructors should include warfighters of all Services.
3. Combat arms officers, line officers, and pilots should attend JWAP. All other types of officers should be included but at lesser priority.
4. JWAP should be offered as an option with full equivalency for 1 year in the current JPME structure, or as a 1½- to 2-year program with an advanced degree. The Naval Postgraduate School advocates a 2-year program leading to a master's degree. The

effect of participating would be positive; only one officer thought its effect would be negative.

5. About one-third of the respondents say that a Joint course on warfare analysis is needed. A minority hold that it is not needed because current Joint education at the Service Schools is adequate or would be adequate if modified toward Jointness.

6. The JWAP course should be attended primarily by intermediate grade officers (51 percent); a master's degree would increase its attractiveness (50 percent), and would be career enhancing (36 percent).

7. A minority (about 25 percent) of respondents say that a JWAP graduate would not enhance the capability of a staff and that a Joint course is not needed because Service colleges provide adequate education on Joint matters or could be modified towards Jointness.

8. It is estimated that 30 to 40 JWAP graduates would be needed each year to fill about 90 to 130 billets on Joint and major Service command staffs, each billet held for about 3 years.

9. The Naval Postgraduate School in Monterey, California, has developed a Joint Warfare Curriculum with a focus to identify technologies critical to success on future battlefields and to examine how best to coordinate them to improve United States capabilities to conduct Joint operations.

B. RECOMMENDATIONS

1. The Department of Defense should proceed with the development of a JWAP that emphasizes methods of evaluating and exploiting Joint capability. This would be an option in JPME, Phase I, for intermediate grade officers.

2. The program should emphasize Joint operational applications of analytical procedures; the faculty should include active or retired warfighting officers, as well as academic specialists of all Services.

3. The JWAP should provide a 1-year option for some officers and a 2-year option for those who elect to earn a master's degree in Joint Warfare Analysis.

4. The Joint Warfare Analysis program should initially target an annual output of about 30 to 40 graduates spread proportionally across the Services to fill an estimated 90 to 130 billets.

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GLOSSARY

AFSC	Armed Forces Staff College
ANSCOL	Army-Navy Staff College
CINC	Commander in Chief
CJCS	Chairman of the Joint Chiefs of Staff
CJDA	Critical Joint Duty Assignment
COS	Critical Occupational Specialty
DOPMA	Defense Officer Personnel Management Act, 1980
G/FO	General/Flag Officer
ICAF	Industrial College of the Armed Forces
ILS	Intermediate Level School
ISC	Intermediate Service College
JDA	Joint Duty Assignment
JDAL	Joint Duty Assignment List
JPME	Joint Professional Military Education
JSO	Joint Specialty Officer
JWAP	Joint Warfare Analysis Program
NPS	Naval Postgraduate School
RDT&E	Research, Development, Test and Evaluation
PJE	Program for Joint Education
PME	Professional Military Education

APPENDIX A
INTERVIEW GUIDE

THE JOINT WARFARE ANALYSIS PROGRAM CONCEPT

As is well known, the Goldwater-Nichols Reorganization Act of 1986 led to a program of Joint Professional Military Education (JPME) directed, under the guidance of the Chairman, Joint Chiefs of Staff, to strengthen combined and Joint operations of the military Services. It is perhaps less well known that the Joint Chiefs of Staff established an Army-Navy Staff College (ANSCOL) in 1943 and that General Dwight D. Eisenhower and Admiral Chester W. Nimitz collaborated to establish the Armed Forces Staff College (AFSC) in 1946.

The evolving nature of warfare has led some senior officers and DoD officials to suggest that current JPME should provide a program that concentrates on ways to analyze military issues that arise from rapidly advancing technology and the changing nature of war, e.g., interoperability of high technology systems, space communications, command and control, modeling and simulation, Joint and Coalition operations, potential mismatches of missions and legacy systems, and more limited operational missions.

The proposed Joint Warfare Analysis Program (JWAP) could be a follow-on to an intermediate-level school or a completely separate curriculum. Graduates would provide the CINCs with staff experts on simulation, wargaming, and analytical tools to evaluate operational plans, alternative force structures and net assessments; they could enhance the Joint, Defense Agency, OSD, and Service staffs. The subject matter of the educational program remains flexible and there could be multiple tracks depending upon each student's background and potential assignments (combat arms, intelligence, command and control, logistics, etc.).

We are collecting information about the need for a JWAP program and are not looking for a commitment or a command position. Rather we are seeking the professional judgement of individuals, especially those with Joint experience. If the concept is appealing to the Combatant CINC's, a formal proposal will be developed and staffed through normal channels with the Services and Joint commands as a follow-on to our study effort.

Interview Guide

This guide serves two purposes: (1) a reminder of what to cover and (2) a way to compile statistics based on the responses. Please try to record responses to the questions on the following pages; for statistical purposes, try also to grade each response on a five-point scale with "1" as "strongly affirmative" or "very important," and "3" as "neutral," and "5" as "not important" or "not needed." If "No Opinion," so indicate.

Background Information about Interviewees

Explain purpose of study and need to collect data from key personnel

Guarantee confidentiality of names and replies

IDA will provide copy of final report

Name, rank, current assignment

Brief personal history

Joint assignments:

Area(s) of specialization

Joint Professional Military Education
schools
courses

Other PME

QUESTIONS TO BE ANSWERED

A. Would a graduate of a Joint Warfare Analysis Program (JWAP) be a desired addition to the staff of a Joint or Service command? What is the criticality of the need? (check response)

- A JWAP graduate would not enhance the capability of my staff (5)
- A JWAP graduate is desired but I am uncertain about my willingness to trade off the skill/experience of a current billet for the skills of a JWAP graduate (3)
- Essential to get a JWAP graduate and willing to trade off a current billet to get a JWAP billet (1)
- Undecided

B. Can you give a rough estimate of a number of JWAP graduates desired/required on your staff? _____

C. What subjects, of those listed below, should be included in the JWAP course? (These subjects are additive to the core JPME subjects of strategy, planning, warfighting, etc.) (rate: 1 most important, 3 useful, 5 not important)

- Techniques of quantitative analysis
- Techniques of qualitative analysis
- Probability statistics
- Operations research models
- Decision aids
- Optimization
- Simulations
- Joint exercise evaluation
- Campaign analysis
- Tactical decision aids
- War gaming
- Information warfare
- Space systems
- Data processing
- Communications
- Costing and Assessment
- Logistics

(continued)

- Interoperability
- Intelligence
- Sensors
- Precision guided missile
- _____
- _____

D. What type of officer should attend this course? (rate: 1-5)

- Combat arms/line officers/pilots
- Intelligence officers
- Logistics officers
- Manpower/personnel specialists
- Communications officers
- Combat support and combat Service support officers
- _____

E. If a JWAP was implemented, how should it be integrated into the current career/intermediate/senior Service college structure?

- As an option in conjunction with current curricula
- As a separate course in lieu of current schooling (with full equivalency)
- As a 2-year program that includes the appropriate level PME equivalency and an advanced degree
- Any other recommended option
- No opinion

F. What effect, do you think, could participation in this program have on an officer's career (i.e., promotion rate, assignment)?

- Positive
- Neutral
- Negative

(continued)

Why?

G. Is a Joint course needed or can current Service schools provide adequate preparation in these areas to perform duties on a Joint staff?

H. Would receiving a master's degree in JWAP increase the attractiveness of this program?
(rate: 1-5) _____

I. If such a course was implemented, what problems do you anticipate?

Is it important for the course to be equivalent to JPME Phase I? (Y/N) _____

What grade should attend the course? (O-3, O-4, O-5) _____

Is it realistic to envision this course as career enhancing as other JPME options?
Why or why not?

Is a 2-year course too long?

J. Are there any other comments you would like to make concerning the JWAP concept?

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